What is claimed is:

1. A portable patient monitor device using an electrically isolated, combined power and signal coupler system, comprising:

a power coupler, comprising:

a magnetically permeable element including a central pole and a peripheral pole; and

a winding, forming an opening through which the central pole protrudes; and

an electrically isolated data transducer; wherein said portable patient monitor device is suitable for docking with a docking station by,

(a) forming a magnetic circuit including a magnetically permeable element in said portable patient monitor device and a corresponding magnetically permeable element in said docking station, and

(b) coupling a data transducer in said portable patient monitor device to a corresponding transducer in said docking station to support connection of said portable patient monitor device to a network and to bidirectionally exchange data.

2. A portable patient monitor device according to claim 1 wherein,

said bidirectionally exchanged data includes patient monitor parameters derived by said portable patient monitor device and information for controlling a function of said portable patient connected device.

3. A portable patient monitor device according to claim 1 wherein,

said network connection of said portable device comprises at least one of, (a) an Internet Protocol (IP) compatible connection, (b) a Universal Serial Bus (USB) compatible connection, (c) a Local Area Network (LAN) compatible connection and (d) an I.E.E.E. protocol compatible connection.

4. A portable patient monitor device according to claim 1 wherein,

the magnetically permeable element is a ferrite armature.

5. A portable patient monitor device according to claim 1 wherein

the magnetically permeable element is arranged to have a relatively thin covering of non-magnetic nonconductive material.

6. A portable patient monitor device according to claim 5 wherein

the relatively thin covering is substantially from 10 to 15 thousandths of an inch.

7. A portable patient monitor device according to claim 5 wherein the non-magnetic nonconductive material is plastic.

8. A portable patient monitor device according to claim 1 wherein the winding is comprised of a printed circuit board which includes an opening through which the central pole of the magnetically permeable element protrudes.

9. A portable patient monitor device according to claim 8 wherein the printed circuit board is a multilayer printed circuit board and the winding comprises a trace around the opening on each layer, connected by feed-throughs between adjacent layers to form a cylinder of traces.

10. A portable patient monitor device according to claim 8 wherein the winding comprises a plurality of cylinders of traces.

11. A portable patient monitor device according to claim 1 wherein the electrically isolated data transducer is an optical data including at least one of, (a) a light-emitting-diode and (b) a photo-transistor.

12. A portable patient monitor device according to claim 1 wherein the electrically isolated data transducer comprises a radio-frequency (RF) data transducer.

13. A portable patient monitor device according to claim 12 wherein the RF data transducer comprises an antenna.

14. A portable patient monitor device according to claim 13 wherein the antenna is shielded.

15. A docking station using an electrically isolated, combined power and signal coupler system, comprising:

a power coupler, comprising:

a magnetically permeable element including a central pole and a peripheral pole; and

a winding, forming an opening through which the central pole protrudes; and

an electrically isolated data transducer; wherein said docking station is suitable for docking with a portable patient monitor device by,

(b) forming a magnetic circuit including a magnetically permeable element in said portable patient monitor device and a corresponding magnetically permeable element in said docking station, and

(b) coupling a data transducer in said portable patient monitor device to a corresponding transducer in said docking station to support connection of said portable patient monitor device to a network and to bidirectionally exchange data.

16. A docking station according to claim 15 wherein,

said bidirectionally exchanged data includes patient monitor parameters derived by said portable patient connected device and information for controlling a function of said portable patient connected device.

17. A docking station according to claim 15 wherein,

said network connection of said portable device comprises at least one of, (a) an Internet Protocol (IP) compatible connection, (b) a Universal Serial Bus (USB) compatible connection, (c) a Local Area Network (LAN) compatible connection and (d) an I.E.E.E. protocol compatible connection.

18. A docking station according to claim 15 wherein,

the magnetically permeable element is a ferrite armature.

19. A docking station according to claim 15 wherein

the magnetically permeable element is arranged to have a relatively thin covering of non-magnetic nonconductive material.

20. A docking station according to claim 19 wherein

the relatively thin covering is substantially from 10 to 15 thousandths of an inch.

21. A docking station according to claim 19 wherein

the non-magnetic nonconductive material is plastic.

22. A docking station according to claim 15 wherein the winding is comprised of a printed circuit board which includes an opening through which the central pole of the magnetically permeable element protrudes.

23. A docking station according to claim 22 wherein the printed circuit board is a multilayer printed circuit board and the winding comprises a trace around the opening on each layer, connected by feed-throughs between adjacent layers to form a cylinder of traces.

24. A docking station according to claim 22 wherein the winding comprises a plurality of cylinders of traces.

25. A docking station according to claim 15 wherein the electrically isolated data transducer is an optical data including at least one of, (a) a light-emitting-diode and (b) a photo-transistor.

26. A docking station according to claim 15 wherein the electrically isolated data transducer comprises a radio-frequency (RF) data transducer.

27. A docking station according to claim 26 wherein the RF data transducer comprises an antenna.

28. A docking station according to claim 27 wherein the antenna is shielded.

29. A communications system suitable for use in a portable patient monitoring network network, comprising:

circuitry for providing a first electrically isolated bidirectional communications channel between the portable device and the central controller via the selected docking station;

circuitry for providing a second electrically isolated bidirectional communications channel between the portable device directly and the central controller; and

circuitry for establishing communications via the first communications channel when the portable device is docked to the selected docking station and establishing communications via the second communications channel otherwise.

30. The system of claim 29 wherein

said portable patient monitoring network includes, a central controller bidirectionally coupled to the network; one or more docking stations each bidirectionally coupled to the network; and one or more portable devices capable of docking with a selected one of the docking stations.

31. The system of claim 29 wherein

said circuitry for establishing communications automatically selects and establishes a particular communication channel in response to at least one of, (a) docking of a portable patient monitor device, (b) detection of loss of communication on an established communication channel and (c)detection of an absence of a particular communication channel.

32. The system of claim 30 wherein the circuitry for providing the first communications channel comprises:

circuitry in the docking station for receiving network-compatible data from the network; and

circuitry in the portable device for extracting data from the received network-compatible data.

33. The system of claim 29 wherein the circuitry for providing the second communications channel further comprises a standalone transceiver, coupled to the network, for receiving the network-compatible data from the portable device and the received network-compatible data on the network.

34. The system of claim 30 wherein the circuitry for providing the second communications channel comprises:

circuitry in the central controller for generating network-compatible data according to a predetermined network protocol and transmitting this data wirelessly to the portable device; and

circuitry in the portable device for receiving the network-compatible data from the central controller and extracting data from the received network-compatible data.

35. The system of claim 29 wherein the circuitry for providing the second communications channel further comprises a standalone transceiver, coupled to the network, for receiving network compatible data from the central controller and transmitting this data wirelessly to the portable device.

36. The system of claim 30 wherein each of the portable devices transmits patient monitoring data to the central controller and the central controller transmits data for controlling the operation of the portable device to the portable device.

37. The system of claim 30 wherein:

the network transmits data formatted according to a predetermined network-compatible protocol; and

each portable device comprises circuitry for generating data according to the network-compatible protocol.

38. The system of claim 37 wherein the selected network protocol is selected from the group consisting of internet protocol (IP), universal serial bus (USB), I.E.E.E. network protocol, and local area network (LAN) protocol.

39. In an electrically isolated portable patient monitoring network comprising: a central controller; one or more docking stations each coupled in communications with the central controller; and one or more portable devices each capable of docking with a selected one of the docking stations; a communications system comprising:

circuitry for providing a first electrically isolated communications channel from the portable device to the central controller via the selected docking station;

circuitry for providing a second electrically isolated communications channel from the portable device directly to the central controller; and

circuitry for establishing communications via the first communications channel when the portable device is docked to the selected docking station and establishing communications via the second communications channel otherwise.

40. The system of claim 39 wherein a data transducer in each docking station is hardwire coupled to the central controller.

41. The system of claim 39 wherein:

a transducer in each docking station comprises a wireless communications antenna; and

the transducer in each portable device comprises a wireless communications antenna arranged to communicate with the wireless communications antenna in the selected docking station when the portable device is docked with the selected docking station.

42. The system of claim 39 wherein:

the central controller comprises a wireless communications antenna; and

the circuitry in each portable device for providing the second communications channel comprises an additional wireless antenna arranged to exchange data with the antenna in the central controller when the portable device is not docked with any of the docking stations.

43. The system of claim 42 wherein:

the central controller comprises a wireless communications antenna; and

the wireless communications antenna in the portable device is further arranged to exchange data with the antenna in the central controller when the portable device is not docked with any of the docking stations.

44. The system of claim 39 wherein:

the central controller comprises a wireless communications antenna; and

the circuitry in each portable device for providing the second communications channel comprises a wireless antenna arranged to exchange data with the antenna in the central controller when the portable device is not docked with any of the docking stations.

45. The system of claim 39 wherein the circuitry for establishing communications is coupled to the circuitry providing the first communications channel and comprises circuitry that determines that the portable device is docked to a selected docking station when data is detected on the first communications channel.

46. The system of claim 39 wherein:

each of the docking stations further comprises an electrically isolated power coupler;

each of the portable devices further comprises an electrically isolated power coupler arranged to receive power from the power coupler in the selected docking station when the portable device is docked to the selected docking station; and

the circuitry for establishing communications comprises:

circuitry in each portable device, coupled to the power coupler in the portable device, that determines that the portable device is docked to a selected docking station when received power is detected; and

circuitry in each docking station, coupled to the power coupler in the docking station, that determines that the portable device is docked to the docking station when a load is detected on the power coupler in the docking station.

47. An electrically isolated, combined power and signal coupler, for a docking station of a patient connected monitoring system, comprising:

a power coupler, comprising:

a magnetically permeable element including a central pole and a peripheral pole; and

a primary winding, forming an opening through which the central pole protrudes; and

an electrically isolated data transducer; and

a portable device, capable of docking with the docking station, comprising:

a power coupler, comprising:

a magnetically permeable element including a central pole and a peripheral pole; and

a secondary winding, forming an opening through which the central pole protrudes; and

an electrically isolated data transducer;

wherein:

when the portable device is docked with the docking station, the magnetically permeable element in the portable device and the magnetically permeable element in the docking station are arranged to form a magnetic circuit, and the data transducer in the portable device and the data transducer in the docking station are arranged to exchange data.

48. The power coupler of claim 47 wherein the magnetically permeable element in the docking station is arranged to have a relatively small separation substantially from 20 to 30 thousandths of an inch from the magnetically permeable element in the monitoring device when the portable device is docked with the docking station.